		NTSB ID: DEN03LA008		Aircraft Registration Number: N315CL	
		Occurrence Date: 10/19/2002		Most Critical Injury: Minor	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place Grand Junction	State CO	Zip Code 81506	Local Time 2157	Time Zone MDT	
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility: 1		Direction From Airport: 180	
Aircraft Information Summary					
Aircraft Manufacturer Diamond Aircraft Industries		Model/Series DA20-C1		Type of Aircraft Airplane	
Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
<p>Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:</p> <p>On October 19, 2002, at 2157 mountain daylight time, a Diamond Aircraft Industries DA20-C1, N315CL, operated by Kempton Air Service, of Grand Junction, Colorado, was destroyed when it struck transmission lines and impacted terrain during a forced landing near Walker Field Airport (GJT), Grand Junction, Colorado. The private pilot received minor injuries and his passenger was not injured. Night visual meteorological conditions prevailed. No flight plan had been filed for this personal cross-country flight being conducted under Title 14 CFR Part 91. The flight originated at Farmington, New Mexico, at approximately 2100.</p> <p>According to the pilot, they departed Grand Junction at 1830 with 18 gallons of fuel in the airplane, and flew direct to Farmington using the airplane's on-board global positioning system (GPS). During the flight, he noticed that he had a 20-knot tail wind. They arrived in Farmington at 2000. Prior to the return flight, he checked the fuel using a stick and the fuel gauge. He determined that there was approximately 9.5 gallons of fuel remaining and decided not to recheck his fuel burn rate. They departed Farmington at 2100.</p> <p>The pilot stated that while over Hopkins Filed, Nucla, Colorado, approximately 50 nautical miles south of Grand Junction, he rechecked the fuel burn rate and calculated it to be approximately 6 gallons per hour, but the fuel gauge did not reflect this. He said the fuel gauge was reading right at the one-quarter mark but should have been over one quarter. "I thought the fuel gauge was malfunctioning, and knew that we could land at Nucla, but I decided not to." He also stated that it was less than an hour to Walker Field, and that even at one-quarter tank, it should have been enough for a 45-minute reserve.</p> <p>At approximately 13 miles southeast of Grand Junction, the pilot contacted Walker Field tower, and was given clearance to land. While over Grand Junction, the engine began to "sputter." He turned the auxiliary fuel pump on and checked the fuel gauge. The fuel gauge was in the "yellow," and he knew that it was unreliable. The engine's performance "improved" and then continued to sputter. He notified the tower that he was having "engine trouble," and they cleared him to land on any runway. While at 7000 feet msl and on final for runway 04, the engine "quit completely." He attempted to hold altitude and restart the engine, but was unable to. The pilot set up for best glide, but realizing he couldn't make it to the airport, he set up to make a forced landing on the eastbound lane of Interstate Highway 70.</p> <p>As he made a right turn to set up for the landing, he noticed a set of power lines right in front of them. The airplane struck the power lines at a 30-degree angle, and in a 20-degree right turn, knocked down two power poles, impacted a ditch, and came to a stop next to the highway. The pilot noticed the power lines lying across the airplane, he saw sparks, and a fire near the left wing. He unbuckled himself and his passenger and they both climbed out and walked up to the road.</p> <p>The airplane impacted the ground and remained on its landing gear in an upright attitude and at a</p>					
FACTUAL REPORT - AVIATION					

National Transportation Safety Board

**FACTUAL REPORT****AVIATION**

NTSB ID: DEN03LA008

Occurrence Date: 10/19/2002

Occurrence Type: Accident

**Narrative** (Continued)

heading of 270 degrees. The nose landing gear was collapsed forward. The empennage was severed from the fuselage approximately 2 feet forward of the vertical stabilizer. The canopy was shattered. There was a cordwise fracture on the left wing, approximately 1-foot outboard of the wing root, beginning at the leading edge and approximately 2 feet in length. At several different positions on the airplane, there were burn marks and melted areas. The left wing was fire damaged.

The wire strike, ground impact, post impact fire, and subsequent electrical power surge, destroyed the airplane.

According to Grand Valley Power, of Grand Junction, Colorado and XCEL Energy of Colorado, a power surge and fluctuation was recorded at 2157. Although the lines were not severed, they were damaged and two power poles were broken and knocked down. The power lines at this installation were high power transmission lines. They were composed of a series of single pole suspension-single arm, 55 foot tall, Class 2, power pole transmission line structures, with a "delta-pattern" four wire arrangement. The arrangement consisted of one static/ground line (at the top of the pole), and three 69,000-volt energized transmission conductors, which were suspended from separate arms that extended laterally from the pole. The poles were placed approximately 300 feet apart.

The pilot stated that the duration of the flight to Farmington was 1 hour and 30 minutes. At Farmington, he checked the fuel and identified that he used 8.5 gallons of fuel and had 9.5 gallons of fuel remaining. This resulted in a calculated fuel burn rate of approximately 5.7 GPH for the flight from Grand Junction to Farmington. With 9.5 gallons of fuel remaining, and using a fuel burn rate of 5.7 GPH, the total calculated flight capability remaining would be approximately 1 hour and 39 minutes.

According to the manufacturer's pilot operating handbook (POH), the DA20-C1, with a Sensenich propeller installed, has a calculated fuel burn rate of 5.0 to 8.8 gallons per hour (GPH), for maximum flight duration. These calculations are dependent on fuel availability, temperature, pressure altitude, and the selected power setting. In reference to the DA20-C1's cruise performance charts, operation at 11,000 feet msl, in standard temperature, with the engine running at 2800 rpm, would result in a power setting of 61.5 percent brake horsepower (bhp), 125 knots true air speed, and a calculated fuel burn rate of 5.9 GPH.


The distance between Grand Junction and Farmington is approximately 143 nautical miles. Using the manufacturer's recommended settings, a flight at 125 knots, with a 20-knot tail wind, would result in a ground speed of 145 knots and would take approximately 59 minutes to fly the distance. A 20-knot headwind on the return flight would have resulted in a ground speed of 105 knots and would have taken approximately 1 hour and 22 minutes to fly the distance. The total calculated flight time for both legs of the flight would be approximately 2 hours and 21 minutes. Adding a 45-minute reserve, and a 10-minute climb after each departure, would require a total flight capability of approximately 3 hours and 26 minutes.


A total flight capability of 3 hours and 26 minutes, with a fuel burn rate of 5.9 GPH, would require 20.24 gallons of fuel.


The POH states, that when using a fuel stick to check the fuel level, "several readings should be taken to confirm accuracy."


At 1753, the reported weather at GJT, was, wind, 330 degrees at 9 knots; visibility, 10 statute miles; sky condition, clear; temperature, 18 degrees C.; dew point, minus 11 degrees C.; altimeter setting, 29.99. The calculated density and pressure altitudes were 6,292 feet and 4,794 feet msl respectively.

At 2153, the reported weather at GJT, was, wind, 060 degrees at 7 knots; visibility, 10 statute miles; sky condition, clear; temperature, 9 degrees C.; dew point, minus 9 degrees C.; altimeter setting, 30.02. The calculated density and pressure altitudes were 5,197 feet and 4,767 feet msl

 National Transportation Safety Board <b>FACTUAL REPORT</b> <b>AVIATION</b>	NTSB ID: DEN03LA008	
	Occurrence Date: 10/19/2002	
	Occurrence Type: Accident	
Narrative (Continued)		
<p>respectively.</p>		
<div>FACTUAL REPORT - AVIATION</div> <div>Page 1b</div>		

 <b>National Transportation Safety Board</b> <b>FACTUAL REPORT</b> <b>AVIATION</b>		NTSB ID: DEN03LA008			
		Occurrence Date: 10/19/2002			
		Occurrence Type: Accident			
<b>Landing Facility/Approach Information</b>					
Airport Name Walker Field	Airport ID: GJT	Airport Elevation 4858 Ft. MSL	Runway Used 04	Runway Length 5520	Runway Width 75
Runway Surface Type: Asphalt					
Runway Surface Condition: Dry					
Type Instrument Approach: NONE					
VFR Approach/Landing: Full Stop; Straight-in					
<b>Aircraft Information</b>					
Aircraft Manufacturer Diamond Aircraft Industries		Model/Series DA20-C1		Serial Number C0015	
Airworthiness Certificate(s): Normal					
Landing Gear Type: Tricycle					
Homebuilt Aircraft? No	Number of Seats: 2	Certified Max Gross Wt. 1720 LBS	Number of Engines: 1		
Engine Type: Reciprocating	Engine Manufacturer: Continental	Model/Series: IO-240-B3B	Rated Power: 125 HP		
<b>- Aircraft Inspection Information</b>					
Type of Last Inspection 100 Hour	Date of Last Inspection 07/2002	Time Since Last Inspection 84 Hours	Airframe Total Time 1284 Hours		
<b>- Emergency Locator Transmitter (ELT) Information</b>					
ELT Installed? Yes	ELT Operated? Yes	ELT Aided in Locating Accident Site? No			
<b>Owner/Operator Information</b>					
Registered Aircraft Owner  Larry G. Kempton		Street Address 2851 Aviators Way			
		City Grand Junction	State CO	Zip Code 81506	
Operator of Aircraft  Same as Reg'd Aircraft Owner		Street Address Same as Reg'd Aircraft Owner			
		City	State	Zip Code	
Operator Does Business As: Kempton Air Service			Operator Designator Code:		
<b>- Type of U.S. Certificate(s) Held: None</b>					
Air Carrier Operating Certificate(s):					
Operating Certificate:			Operator Certificate:		
Regulation Flight Conducted Under: Part 91: General Aviation					
Type of Flight Operation Conducted: Personal					
<div style="text-align: center;">FACTUAL REPORT - AVIATION</div> <div style="text-align: right;">Page 2</div>					

 <b>National Transportation Safety Board</b> <b>FACTUAL REPORT</b> <b>AVIATION</b>			NTSB ID: DEN03LA008																																																																																			
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<b>First Pilot Information</b>																																																																																						
Name			City		State	Date of Birth	Age																																																																															
On File			On File		On File	On File	21																																																																															
Sex: M	Seat Occupied: Left		Principal Profession: Civilian Pilot			Certificate Number: On File																																																																																
Certificate(s): Private																																																																																						
Airplane Rating(s): Single-engine Land																																																																																						
Rotorcraft/Glider/LTA: None																																																																																						
Instrument Rating(s): None																																																																																						
Instructor Rating(s): None																																																																																						
Type Rating/Endorsement for Accident/Incident Aircraft? No					Current Biennial Flight Review? 05/2002																																																																																	
Medical Cert.: Class 2		Medical Cert. Status: Valid Medical--no waivers/lim.			Date of Last Medical Exam: 09/2002																																																																																	
<table border="1"> <tr> <th rowspan="2">- Flight Time Matrix</th> <th rowspan="2">All A/C</th> <th rowspan="2">This Make and Model</th> <th rowspan="2">Airplane Single Engine</th> <th rowspan="2">Airplane Multi-Engine</th> <th rowspan="2">Night</th> <th colspan="2">Instrument</th> <th rowspan="2">Rotorcraft</th> <th rowspan="2">Glider</th> <th rowspan="2">Lighter Than Air</th> </tr> <tr> <th>Actual</th> <th>Simulated</th> </tr> <tr> <td>Total Time</td> <td>125</td> <td>25</td> <td>125</td> <td>1</td> <td>20</td> <td>3</td> <td>10</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pilot In Command(PIC)</td> <td>80</td> <td></td> <td>125</td> <td></td> <td>15</td> <td>3</td> <td>7</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Instructor</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 90 Days</td> <td>8</td> <td>6</td> <td>13</td> <td></td> <td>3</td> <td>3</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 30 Days</td> <td>8</td> <td>3</td> <td>8</td> <td></td> <td>3</td> <td></td> <td>2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 24 Hours</td> <td></td> <td>3</td> <td>3</td> <td></td> <td>2</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>								- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air	Actual	Simulated	Total Time	125	25	125	1	20	3	10				Pilot In Command(PIC)	80		125		15	3	7				Instructor											Last 90 Days	8	6	13		3	3					Last 30 Days	8	3	8		3		2				Last 24 Hours		3	3		2					
- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument								Rotorcraft	Glider				Lighter Than Air																																																																			
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Last 30 Days	8	3	8		3		2																																																																															
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Seatbelt Used? Yes		Shoulder Harness Used? Yes			Toxicology Performed? No		Second Pilot? No																																																																															
<b>Flight Plan/Itinerary</b>																																																																																						
Type of Flight Plan Filed: None																																																																																						
Departure Point		State	Airport Identifier	Departure Time		Time Zone																																																																																
Farmington		NM	FMN	2100		MDT																																																																																
Destination		State	Airport Identifier																																																																																			
Same as Accident/Incident Location			GJT																																																																																			
Type of Clearance: None																																																																																						
Type of Airspace: Class D																																																																																						
<b>Weather Information</b>																																																																																						
Source of Briefing: Unknown																																																																																						
Method of Briefing: Unknown																																																																																						

 <b>National Transportation Safety Board</b> <b>FACTUAL REPORT</b> <b>AVIATION</b>			NTSB ID: DEN03LA008		
			Occurrence Date: 10/19/2002		
			Occurrence Type: Accident		

<b>Weather Information</b>					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
GJT	2053	MDT	4858 Ft. MSL	1 NM	0 Deg. Mag.
Sky/Lowest Cloud Condition: Clear				Ft. AGL	Condition of Light: Night
Lowest Ceiling: None			Ft. AGL	Visibility: 10 SM	Altimeter: 30.02 "Hg
Temperature: 9 °C	Dew Point: -9 °C	Wind Direction: 60		Density Altitude: 5197	Ft.
Wind Speed: 7	Gusts:	Weather Conditions at Accident Site: Visual Conditions			
Visibility (RVR): Ft.	Visibility (RVV)	SM	Intensity of Precipitation:		
Restrictions to Visibility: None					
Type of Precipitation: None					

<b>Accident Information</b>					
Aircraft Damage: Substantial		Aircraft Fire: Ground		Aircraft Explosion: None	
Classification: U.S. Registered/U.S. Soil					

- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot			1		1
Second Pilot					
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants					
Other Crew					
Passengers				1	1
- TOTAL ABOARD -			1	1	2
Other Ground					
- GRAND TOTAL -			1	1	2

FACTUAL REPORT - AVIATION	Page 4
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National Transportation Safety Board

**FACTUAL REPORT****AVIATION**

NTSB ID: DEN03LA008

Occurrence Date: 10/19/2002

Occurrence Type: Accident

## Administrative Information

Investigator-In-Charge (IIC)

Brannon D. Mayer

Additional Persons Participating in This Accident/Incident Investigation:

Dave Rodda  
Salt Lake City FSDO  
116 N. 2400 W.  
Salt Lake City, UT 84116